IN THE CLAIMS

Claims 1-23 (Cancelled)

24. (New) A semiconductor laser device comprising:

a first stripe structure that has at least a first active layer grown on a first portion of a semiconductor substrate and a first electrode formed on the first active layer, and emits a first laser beam;

a second stripe structure that has at least a second active layer grown on a second portion of the semiconductor substrate and a second electrode formed on the second active layer, and emits a second laser beam; and

a first non-current-injection area that is formed on a portion of an upper surface of the first stripe structure.

25. (New) The semiconductor laser device according to claim 24, further comprising a second non-current-injection area that is formed on a portion of an upper surface of the second stripe structure, wherein

a dimension of the second non-current-injection area is different from a dimension of the first non-injection area.

26. (New) The semiconductor laser device according to claim 24, wherein the first non-current-injection area is formed as an area in the portion of the upper surface of the first stripe structure where the first electrode is absent .

27. (New) The semiconductor laser device to claim 24, further comprising:

a first spacer layer that is formed between the first active layer and the first electrode;

a second spacer layer that is formed between the second active layer and the second

electrode;

a first diffraction grating that is formed on a portion of the first spacer layer, and selects the first laser beam including a plurality of oscillation longitudinal modes having a specific center wavelength; and

a second diffraction grating that is formed on a portion of the second spacer layer, and selects the second laser beam including a plurality of oscillation longitudinal modes having a specific center wavelength.

28. (New) The semiconductor laser device according to claim 27, wherein the first diffraction grating is formed in an area under the first non-current-injection area.

29.(New) A semiconductor laser device comprising:

a first stripe structure that has at least a first active layer grown on a first portion of a semiconductor substrate and a first electrode formed on the first active layer, and emits a first laser beam; and

a second stripe structure that has at least a second active layer grown on a second portion of the semiconductor substrate and a second electrode formed on the second active layer, and emits a second laser beam, wherein

a thermal conduction efficiency between the first active layer and the first electrode differs from a thermal conduction efficiency between the second active layer and the second electrode.

30.(New) The semiconductor laser device according to claim 29, further comprising:

a first diffraction grating that is formed in a vicinity of the first active layer, and

selects the first laser beam including a plurality of oscillation longitudinal modes with a specific center wavelength; and

a second diffraction grating that is formed in a vicinity of the second active layer, and selects the second laser beam including a plurality of oscillation longitudinal modes with a specific center wavelength.

31. (New) The semiconductor laser device according to claim 29, wherein a lateral width of the first stripe structure differs from a lateral width of the second stripe structure.

32. (New) The semiconductor laser device according to claim 29, wherein a distance between the first active layer and the first electrode differs from a distance between the second active layer and the second electrode.

33. (New) The semiconductor laser device according to claim 32, further comprising:

a first clad layer formed between the first active layer and the first electrode; and

a second clad layer formed between the second active layer and the second electrode, wherein

a thickness of the first clad layer differs from a thickness of the second clad layer.

34. (New) A semiconductor laser device comprising:

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate and a first diffraction grating formed in a vicinity of the first active layer, said first stripe structure configured to emit a first laser beam having a plurality of

oscillation longitudinal modes with a first center wavelength selected by the first diffraction grating; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate and a second diffraction grating formed in a vicinity of the second active layer, said second stripe structure configured to emit a second laser beam having a plurality of oscillation longitudinal modes with a second center wavelength selected by the second diffraction grating, wherein

the first center wavelength differs from the second center wavelength.

35. (New) The semiconductor laser device according to claim 34, wherein a period of the first diffraction grating differs from a period of the second diffraction grating.

36. (New) The semiconductor laser device according to claim 34, wherein an oscillation wavelength spectrum formed by the oscillation longitudinal modes belonging to the first laser beam and an oscillation wavelength spectrum formed by the oscillation longitudinal modes belonging to the second laser beam do not cross each other in a range in which the intensity difference with respect to a peak power is not more than 3 dB.

37. (New) The semiconductor laser device according to claim 34, wherein

the second center wavelength is shorter than the first center wavelength, and

a frequency difference between the oscillation longitudinal mode having a minimum wavelength among the oscillation longitudinal modes of intensity not more than 10 dB below a peak power in the first laser beam and the oscillation longitudinal mode having a maximum wavelength among the oscillation longitudinal modes of intensity not more than 10 dB below a peak power in the second laser beam is greater than an electrical frequency bandwidth of an

optical transmission system being used.

38. (New) A semiconductor laser device comprising:

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate and a first diffraction grating formed in a vicinity of the first active layer, said first stripe structure configured to emit a first laser beam having a plurality of oscillation longitudinal modes with a first center wavelength selected by the first diffraction grating; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate and a second diffraction grating formed in a vicinity of the second active layer, said second stripe structure configured to emit a second laser beam having a plurality of oscillation longitudinal modes with a second center wavelength selected by the second diffraction grating, wherein

the first center wavelength and the second center wavelength differ by not less than 0.5 times an oscillation longitudinal mode spacing of either of the first laser beam and the second laser beam.

39. (New) The semiconductor laser device according to claim 38, wherein the first center wavelength and the second center wavelength differ by not less than 1.5 times an oscillation longitudinal mode spacing of either of the first laser beam and the second laser beam.

40. (New) The semiconductor laser device according to claim 38, wherein the first center wavelength and the second center wavelength differ by not less than five times an oscillation longitudinal mode spacing of either of the first laser beam and the second laser

beam.

41. (New) A semiconductor laser device comprising:

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate, said first stripe structure configured to emit a first laser beam having a plurality of oscillation longitudinal modes ; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate , said second stripe structure configured to emit a second laser beam having a plurality of oscillation longitudinal modes, wherein

a wavelength difference between the oscillation longitudinal mode of maximum intensity in the first laser beam and the oscillation longitudinal mode of maximum intensity in the second laser beam is not less than 0.01 nm.

42. (New) The semiconductor laser device according to claim 41, wherein the wavelength difference is not less than 0.1 nm.

43. (New) A semiconductor laser device comprising:

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate, said first stripe structure configured to emit a first laser beam having a plurality of oscillation longitudinal modes; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate, said second stripe structure configured to emit a second laser beam having a plurality of oscillation longitudinal modes, wherein

a wavelength difference between all the oscillation longitudinal modes of intensity not more than 3 dB below a peak power of the first laser beam and all the oscillation longitudinal

modes of intensity not more than 3 dB below a peak power of the second laser beam is not less than 0.01 nm.

44. (New) The semiconductor laser device according to claim 43, wherein the wavelength difference is not less than 0.1 nm.

45. (New) A semiconductor laser module comprising:

a semiconductor laser device including

a first stripe structure that has at least a first active layer grown on a first portion of a semiconductor substrate and a first electrode formed on the first active layer, and emits a first laser beam;

a second stripe structure that has at least a second active layer grown on a second portion of the semiconductor substrate and a second electrode formed on the second active layer, and emits a second laser beam; and

a first non-current-injection area that is formed on a portion of an upper surface of the first stripe structure;

a first lens on which the first laser beam and the second laser beam are incident;

a polarization rotating unit on which either of the first laser beam and the second laser beam emerging from the first lens is incident, said polarization rotating unit being configured to rotate the polarization plane of the incident laser beam by a predetermined angle;

a polarization-combining unit including a first port on which the first laser beam emerging from either of the first lens and the polarization rotating unit is incident, a second port on which the second laser beam emerging from either of the polarization rotating unit and the first lens is incident, and a third port from which the first laser beam and the second laser beam emerge as a combined laser beam; and

an optical fiber that receives the combined laser beam emerging from the third port of the polarization-combining unit, and transmits the combined laser beam to outside.

46. (New) The semiconductor module according to claim 45, wherein the first lens is a single lens configured to separate the first laser beam and the second laser beam so as to widen a distance therebetween.

47. (New) A semiconductor laser module comprising:

a semiconductor laser device including

a first stripe structure that has at least a first active layer grown on a first portion of a semiconductor substrate and a first electrode formed on the first active layer, and emits a first laser beam; and

a second stripe structure that has at least a second active layer grown on a second portion of the semiconductor substrate and a second electrode formed on the second active layer, and emits a second laser beam, wherein a thermal conduction efficiency between the first active layer and the first electrode differs from a thermal conduction efficiency between the second active layer and the second electrode;

a first lens on which the first laser beam and the second laser beam are incident;

a polarization rotating unit on which either of the first laser beam and the second laser beam emerging from the first lens is incident, said polarization rotating unit being configured to rotate the polarization plane of the incident laser beam by a predetermined angle;

a polarization-combining unit including a first port on which the first laser beam emerging from either of the first lens and the polarization rotating unit is incident, a second port on which the second laser beam emerging from either of the polarization rotating unit and the first lens is incident, and a third port from which the first laser beam and the second

laser beam emerge as a combined laser beam; and

an optical fiber that receives the combined laser beam emerging from the third port of the polarization-combining unit, and transmits the combined laser beam to outside.

48. (New) The semiconductor module according to claim 47, wherein the first lens is a single lens configured to separate the first laser beam and the second laser beam so as to widen a distance therebetween.

49. (New) A semiconductor laser module comprising:

a semiconductor laser device including

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate and a first diffraction grating formed in a vicinity of the first active layer, said first stripe structure configured to emit a first laser beam having a plurality of oscillation longitudinal modes with a first center wavelength selected by the first diffraction grating; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate and a second diffraction grating formed in a vicinity of the second active layer, said second stripe structure configured to emit a second laser beam having a plurality of oscillation longitudinal modes with a second center wavelength selected by the second diffraction grating, wherein the first center wavelength differs from the second center wavelength;

a first lens on which the first laser beam and the second laser beam are incident;

a polarization rotating unit on which either of the first laser beam and the second laser beam emerging from the first lens is incident, said polarization rotating unit being configured to rotate the polarization plane of the incident laser beam by a predetermined angle;

a polarization-combining unit including a first port on which the first laser beam emerging from either of the first lens and the polarization rotating unit is incident, a second port on which the second laser beam emerging from either of the polarization rotating unit and the first lens is incident, and a third port from which the first laser beam and the second laser beam emerge as a combined laser beam; and

an optical fiber that receives the combined laser beam emerging from the third port of the polarization-combining unit, and transmits the combined laser beam to outside.

50. (New) The semiconductor module according to claim 49, wherein the first lens is a single lens configured to separate the first laser beam and the second laser beam so as to widen a distance therebetween.

51. (New) A semiconductor laser module comprising:

a semiconductor laser device including

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate and a first diffraction grating formed in a vicinity of the first active layer, said first stripe structure configured to emit a first laser beam having a plurality of oscillation longitudinal modes with a first center wavelength selected by the first diffraction grating; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate and a second diffraction grating formed in a vicinity of the second active layer, said second stripe structure configured to emit a second laser beam having a plurality of oscillation longitudinal modes with a second center wavelength selected by the second diffraction grating, wherein the first center wavelength and the second center wavelength differ by not less than 0.5 times an oscillation longitudinal mode spacing of either

of the first laser beam and the second laser beam;

a first lens on which the first laser beam and the second laser beam are incident;

a polarization rotating unit on which either of the first laser beam and the second laser beam emerging from the first lens is incident, said polarization rotating unit being configured to rotate the polarization plane of the incident laser beam by a predetermined angle;

a polarization-combining unit including a first port on which the first laser beam emerging from either of the first lens and the polarization rotating unit is incident, a second port on which the second laser beam emerging from either of the polarization rotating unit and the first lens is incident, and a third port from which the first laser beam and the second laser beam emerge as a combined laser beam; and

an optical fiber that receives the combined laser beam emerging from the third port of the polarization-combining unit, and transmits the combined laser beam to outside.

52. (New) The semiconductor module according to claim 51, wherein the first lens is a single lens configured to separate the first laser beam and the second laser beam so as to widen a distance therebetween.

53. (New) A semiconductor laser module comprising:

a semiconductor laser device including

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate, said first stripe structure configured to emit a first laser beam having a plurality of oscillation longitudinal modes; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate, said second stripe structure configured to emit a second laser beam having a plurality of oscillation longitudinal modes , wherein a wavelength

difference between the oscillation longitudinal mode of maximum intensity in the first laser beam and the oscillation longitudinal mode of maximum intensity in the second laser beam is not less than 0.01 nm;

a first lens on which the first laser beam and the second laser beam are incident;

a polarization rotating unit on which either of the first laser beam and the second laser beam emerging from the first lens is incident, said polarization rotating unit being configured to rotate the polarization plane of the incident laser beam by a predetermined angle;

a polarization-combining unit including a first port on which the first laser beam emerging from either of the first lens and the polarization rotating unit is incident, a second port on which the second laser beam emerging from either of the polarization rotating unit and the first lens is incident, and a third port from which the first laser beam and the second laser beam emerge as a combined laser beam; and

an optical fiber that receives the combined laser beam emerging from the third port of the polarization-combining unit, and transmits the combined laser beam to outside.

54. (New) The semiconductor module according to claim 53, wherein the first lens is a single lens configured to separate the first laser beam and the second laser beam so as to widen a distance therebetween.

55. (New) A semiconductor laser module comprising:

a semiconductor laser device including

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate, said first stripe structure configured to emit a first laser beam having a plurality of oscillation longitudinal modes; and

a second stripe structure that has a second active layer grown on a second

portion of the semiconductor substrate, said second stripe structure configured to emit a second laser beam having a plurality of oscillation longitudinal modes, wherein a wavelength difference between all the oscillation longitudinal modes of intensity not more than 3 dB below a peak power of the first laser beam and all the oscillation longitudinal modes of intensity not more than 3 dB below a peak power of the second laser beam is not less than 0.01 nm;

a first lens on which the first laser beam and the second laser beam are incident;

a polarization rotating unit on which either of the first laser beam and the second laser beam emerging from the first lens is incident, said polarization rotating unit being configured to rotate the polarization plane of the incident laser beam by a predetermined angle;

a polarization-combining unit including a first port on which the first laser beam emerging from either of the first lens and the polarization rotating unit is incident, a second port on which the second laser beam emerging from either of the polarization rotating unit and the first lens is incident, and a third port from which the first laser beam and the second laser beam emerge as a combined laser beam; and

an optical fiber that receives the combined laser beam emerging from the third port of the polarization-combining unit, and transmits the combined laser beam to outside.

56. (New) The semiconductor module according to claim 55, wherein the first lens is a single lens configured to separate the first laser beam and the second laser beam so as to widen a distance therebetween.

57. (New) An optical fiber amplifier comprising:

a pump light source generating a pump light of reduced degree of polarization by polarization combining a first laser beam and a second laser beam emitted from a

semiconductor laser device, said semiconductor laser device including

a first stripe structure that has at least a first active layer grown on a first portion of a semiconductor substrate and a first electrode formed on the first active layer, and emits the first laser beam;

a second stripe structure that has at least a second active layer grown on a second portion of the semiconductor substrate and a second electrode formed on the second active layer, and emits the second laser beam; and

a first non-current-injection area that is formed on a portion of an upper surface of the first stripe structure;

an optical coupler that couples a signal light with the pump light; and

an amplification optical fiber that amplifies the signal light based on a Raman amplification.

58. (New) An optical fiber amplifier comprising:

a pump light source generating a pump light of reduced degree of polarization by polarization combining a first laser beam and a second laser beam emitted from a semiconductor laser device, said semiconductor laser device including

a first stripe structure that has at least a first active layer grown on a first portion of a semiconductor substrate and a first electrode formed on the first active layer, and emits the first laser beam; and

a second stripe structure that has at least a second active layer grown on a second portion of the semiconductor substrate and a second electrode formed on the second active layer, and emits the second laser beam, wherein a thermal conduction efficiency between the first active layer and the first electrode differs from a thermal conduction efficiency between the second active layer and the second electrode;

an optical coupler that couples a signal light with the pump light; and

an amplification optical fiber that amplifies the signal light based on a Raman amplification.

59. (New) An optical fiber amplifier comprising:

a pump light source generating a pump light of reduced degree of polarization by polarization combining a first laser beam and a second laser beam emitted from a semiconductor laser device, said semiconductor laser device including

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate and a first diffraction grating formed in a vicinity of the first active layer, said first stripe structure configured to emit the first laser beam having a plurality of oscillation longitudinal modes with a first center wavelength selected by the first diffraction grating; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate and a second diffraction grating formed in a vicinity of the second active layer, said second stripe structure configured to emit the second laser beam having a plurality of oscillation longitudinal modes with a second center wavelength selected by the second diffraction grating, wherein the first center wavelength differs from the second center wavelength;

an optical coupler that couples a signal light with the pump light; and

an amplification optical fiber that amplifies the signal light based on a Raman amplification.

60. (New) An optical fiber amplifier comprising:

a pump light source generating a pump light of reduced degree of polarization by

polarization combining a first laser beam and a second laser beam emitted from a semiconductor laser device, said semiconductor laser device including

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate and a first diffraction grating formed in a vicinity of the first active layer, said first stripe structure configured to emit the first laser beam having a plurality of oscillation longitudinal modes with a first center wavelength selected by the first diffraction grating; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate and a second diffraction grating formed in a vicinity of the second active layer, said second stripe structure configured to emit the second laser beam having a plurality of oscillation longitudinal modes with a second center wavelength selected by the second diffraction grating, wherein the first center wavelength and the second center wavelength differ by not less than 0.5 times an oscillation longitudinal mode spacing of either of the first laser beam and the second laser beam;

an optical coupler that couples a signal light with the pump light; and

an amplification optical fiber that amplifies the signal light based on a Raman amplification.

61. (New) An optical fiber amplifier comprising:

a pump light source generating a pump light of reduced degree of polarization by polarization combining a first laser beam and a second laser beam emitted from a semiconductor laser device, said semiconductor laser device including

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate, said first stripe structure configured to emit the first laser beam having a plurality of oscillation longitudinal modes ; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate, said second stripe structure configured to emit the second laser beam having a plurality of oscillation longitudinal modes , wherein a wavelength difference between the oscillation longitudinal mode of maximum intensity in the first laser beam and the oscillation longitudinal mode of maximum intensity in the second laser beam is not less than 0.01 nm;

an optical coupler that couples a signal light with the pump light; and

an amplification optical fiber that amplifies the signal light based on a Raman amplification.

62. (New) An optical fiber amplifier comprising:

a pump light source generating a pump light of reduced degree of polarization by polarization combining a first laser beam and a second laser beam emitted from a semiconductor laser device, said semiconductor laser device including

a first stripe structure that has a first active layer grown on a first portion of a semiconductor substrate, said first stripe structure configured to emit the first laser beam having a plurality of oscillation longitudinal modes; and

a second stripe structure that has a second active layer grown on a second portion of the semiconductor substrate, said second stripe structure configured to emit the second laser beam having a plurality of oscillation longitudinal modes, wherein a wavelength difference between all the oscillation longitudinal modes of intensity not more than 3 dB below a peak power of the first laser beam and all the oscillation longitudinal modes of intensity not more than 3 dB below a peak power of the second laser beam is not less than 0.01 nm;

an optical coupler that couples a signal light with the pump light; and

an amplification optical fiber that amplifies the signal light based on a Raman amplification.